

Claims

1. A linear guide device including a guide rail, a slider
main body having rolling element raceway surfaces opposing to
5 rolling element raceway surfaces formed on the guide rail along
the longitudinal direction of the guide rail, end caps each
having rolling element direction changing channels in
communication with a rolling element load rolling channel formed
between both of rolling element raceway surfaces of the guide
10 rail and the slider main body and in communication with rolling
element return channels perforated through the slider main body
along the longitudinal direction of the guide rail, a plurality
of rolling elements that roll through the rolling element load
rolling channel, the rolling element return channel, and the
15 rolling element direction changing channel along with the
relative linear motion of a slider comprising the slider main
body and the end caps, and a plurality of separators each
interposed between adjacent two rolling elements among the
plurality of the rolling elements, in which the end cap has
20 through-holes for assembling the rolling elements and the
separators from the outside of the slider into the rolling
element return channel.

2. A linear guide device according to claim 1, wherein the
25 end cap has cap members for closing the through-holes.

3. A linear guide device according to claim 2, wherein the

cap members fit in the through-holes to form portions of the rolling element direction changing channel.

4. A linear guide device according to any one of claims 1 to 5, wherein the rolling element is a roller.

5. A linear guide device according to any one of claims 1 to 4, wherein the separator has a concave rolling element contact surface in contact with the rolling element.

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6. A linear guide device according to any one of claims 1 to 5, wherein the separator includes a main body portion situating between the rolling elements and a pair of right and left arm portions disposed on both sides of the main body portion.

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7. A linear guide device according to claim 6, wherein the through-hole has guide grooves slidably engaging the arm portions of the separator.

20 8. A linear guide device according to claim 6, wherein the rolling element return channel and the rolling element direction changing channel have guide grooves for slidably engaging the arm portions of the separator.

25 9. A linear guide device according to any one of claims 1 to 8, wherein the separators are connected in a row by a flexible belt-like connection member.

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10. A linear guide device according to any one of claims 1 to 9, wherein the through-holes are formed in the end cap so as to oppose to the rolling element return channels.

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11. A linear guide device according to any one of claims 1 to 10, wherein the through-holes are formed in the end cap coaxially with an extension line extended from the centerline of the rolling element return channel.

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12. A linear guide device according to any one of claims 1 to 11, wherein the through-holes are formed in the end cap with an area of opening being larger than the area of opening for the rolling element return channel.

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13. A linear guide device according to any one of claims 1 to 12, wherein the through-holes are formed in the end cap with an area of opening being substantially equal with the area of opening for the rolling element return channel.

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14. A linear guide device according to any one of claims 1 to 13, wherein the through-holes are formed in the end cap so as to intersect the extension line extended from the center line of the rolling element return channel.

15. A linear guide device according to any one of claims 1 to 14, wherein the through-holes are formed into a shape including

a portion of the cross sectional shape of the rolling element
return channel.

16. A linear guide device according to any one of claims 1 to
5 15, wherein the end cap has positioning portions for positioning
the cap members.

17. A linear guide device according to claim 16, wherein the
cap member has engaging portions engaging the positioning
10 portions.

18. A linear guide device according to any one of claims 6 to
17, wherein the rolling elements and the separators are
assembled from the through-hole into the slider by using a
15 rolling element insertion jig having two inner wall surfaces
opposing to the sides of the arm portion respectively.

19. A linear guide device according to claim 18, wherein the
rolling element insertion jig is formed into a shape as fitting
20 to the through-hole.

20. A linear guide device according to claim 19, wherein the
end cap has positioning members that engage the top end of the
rolling element insertion jig to position the rolling element
25 insertion jig and position the cap member.

21. A linear guide device according to any one of claims 1 to

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3, wherein the rolling element is a ball.